WHAT IS CLAIMED IS:

1. A process for preparing 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone, said process comprising the steps of:

a) reducing 1,1,1,3,3,3-hexafluoroacetone with hydrogen in the presence of a first hydrogenation catalyst to produce a product mixture comprising 1,1,1,3,3,3-hexafluoroisopropanol and 1,1,1-trifluoroacetone; and

b) preparing 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone by subjecting the product mixture to a purification process comprising at least one purification step selected from the group consisting of:

i) subjecting the product mixture to a further reducing with hydrogen in the presence of a second hydrogenation catalyst to yield a reduced product mixture, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said reduced product mixture by fractional distillation;

ii) cooling the product mixture to a temperature at which the 1,1,1,3,3,3-hexafluoroisopropanol freezes and the 1,1,1-

trifluoroacetone remains liquid;

iii) subjecting the product mixture, which, for the purposes of this purification step, further comprises a high boiling complex comprising hydrofluoric acid and 1,1,1-trifluoroacetone, to fractional distillation, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling complex by fractional distillation; and

iv) subjecting the product mixture to hydrofluoric acid-free conditions wherein 1,1,1,3,3,3-hexafluoroisopropanol forms a high boiling azeotrope with 1,1,1-trifluoroacetone, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling azeotrope by fractional distillation.

2. The process according to claim 1, wherein the first hydrogenation catalyst is a palladium on carbon catalyst.

3. The process according to claim 2, wherein the palladium on carbon catalyst is a 2% palladium on carbon catalyst.

4. The process according to claim 1, wherein the product mixture is subjected to a

purification process comprising subjecting the product mixture to a further reducing with hydrogen in the presence of a second hydrogenation catalyst to yield a reduced product mixture, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said reduced product mixture by fractional distillation.

5. The process according to claim 4, wherein the second hydrogenation catalyst is a palladium on carbon catalyst.

6. The process according to claim 5, wherein the palladium on carbon catalyst is a 2% palladium on carbon catalyst.

7. The process according to claim 1, wherein the product mixture is subjected to a purification process comprising cooling the product mixture to a temperature at which the 1,1,1,3,3,3-hexafluoroisopropanol freezes and the 1,1,1-trifluoroacetone remains liquid.

8. The process according to claim 7, wherein the product mixture is cooled to a temperature between about -4°C and about -78°C.

9. The process according to claim 1, wherein the product mixture is subjected to a purification process comprising subjecting a product mixture further comprising a high boiling complex comprising hydrofluoric acid and 1,1,1-trifluoroacetone to fractional distillation, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from

said high boiling complex by fractional distillation.

10. The process according to claim 9, which comprises adding hydrofluoric acid to the product mixture in a ratio of hydrofluoric acid:product mixture of from about 1:99 to about 1:19.

11. The process according to claim 9, wherein hydrofluoric acid is introduced along with the reactants or separately added to reduction step (a).

12. The process according to claim 1, wherein the product mixture is subjected to a purification process comprising subjecting the product mixture to hydrofluoric acid-free conditions wherein 1,1,1,3,3,3-hexafluoroisopropanol forms a high boiling azeotrope with 1,1,1-trifluoroacetone, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling azeotrope by fractional distillation.

13. The process according to claim 12, wherein the hydrofluoric acid-free conditions are established by subjecting the product mixture to filtration through silica or potassium fluoride.

14. A process for separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from a mixture comprising 1,1,1,3,3,3-hexafluoroisopropanol and 1,1,1-trifluoroacetone, said process comprising the steps of:

a) providing a mixture comprising 1,1,1,3,3,3-hexafluoroisopropanol and 1,1,1-trifluoroacetone; and

b) preparing 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone by subjecting the mixture to a purification process comprising at least one purification step selected from the group consisting of:

i) subjecting the mixture to a reducing with hydrogen in the presence of a hydrogenation catalyst to yield a reduced mixture, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said reduced mixture by fractional distillation;

ii) cooling the mixture to a temperature at which the 1,1,1,3,3,3-hexafluoroisopropanol freezes and the 1,1,1-trifluoroacetone remains liquid;

iii) subjecting the mixture, which, for the purposes of this purification step, further comprises a high boiling complex comprising hydrofluoric acid and 1,1,1-trifluoroacetone, to fractional

distillation, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling complex by fractional distillation; and

iv) subjecting the mixture to hydrofluoric acid-free conditions wherein 1,1,1,3,3,3-hexafluoroisopropanol forms a high boiling azeotrope with 1,1,1-trifluoroacetone, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling azeotrope by fractional distillation.

15. The process according to claim 14, wherein the mixture is subjected to a purification process comprising subjecting the mixture to a reducing with hydrogen in the presence of a hydrogenation catalyst to yield a reduced mixture, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said reduced mixture by fractional distillation.

16. The process according to claim 15, wherein the hydrogenation catalyst is a palladium on carbon catalyst.

17. The process according to claim 16, wherein the palladium on carbon catalyst is a 2% palladium on carbon catalyst.

18. The process according to claim 14, wherein the mixture is subjected to a purification process comprising cooling the mixture to a temperature at which the 1,1,1,3,3,3-hexafluoroisopropanol freezes and the 1,1,1-trifluoroacetone remains liquid.

19. The process according to claim 18, wherein the mixture is cooled to a temperature between about -4°C and about -78°C.

20. The process according to claim 14, wherein the mixture is subjected to a purification process comprising subjecting a mixture further comprising a high boiling complex comprising hydrofluoric acid and 1,1,1-trifluoroacetone to fractional distillation, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling complex by fractional distillation.

21. The process according to claim 20, which comprises adding hydrofluoric acid to the mixture in a ratio of hydrofluoric acid:mixture of from about 1:99 to about 1:19.

22. The process according to claim 20, wherein the mixture already comprises hydrofluoric acid.

23. The process according to claim 14, wherein the mixture is subjected to a purification process comprising subjecting the mixture to hydrofluoric acid-free conditions wherein 1,1,1,3,3,3-hexafluoroisopropanol forms a high boiling azeotrope with 1,1,1-

trifluoroacetone, and separating 1,1,1,3,3,3-hexafluoroisopropanol substantially free of 1,1,1-trifluoroacetone from said high boiling azeotrope by fractional distillation.

24. The process according to claim 23, wherein the hydrofluoric acid-free conditions are established by subjecting the mixture to filtration through silica or potassium fluoride.